ICMT-4000

ITS Cabinet Monitoring System Tester

User's Manual
Revision 1.3

Table of Contents

1. Explanation of Symbols, Terms, and Abbreviations....2
2. Safety Information....4
3. ICMT-4000 Installation....5
    3.1. Computer Requirements....5
    3.2. ICMT-4000 Interface Software Installation....5
    3.3. ICMT-4000 USB Driver Installation....5
4. Running Tests....7
    4.1. Testing CMU....7
    4.2. Testing AMU....7
5. Test Descriptions....8
    5.1. CMU Tests....8
    5.2. AMU Tests....9
6. Service and Calibration....10
7. Limited Warranty and Liability....11

1. Explanation of Symbols, Terms, and Abbreviations

Graphical Symbols

The following symbols are used on the ICMT-4000 enclosure and in this manual. Anytime one of these symbols is encountered the user should be aware of the condition described here next to each symbol.

Caution. Risk of danger. Read the Users Manual before operating the ICMT-4000.

Caution. Risk of electric shock.

Terms and Abbreviations

The following is a list of terms and abbreviations used throughout the text of this manual along with the definition.

Term or Abbreviation	Definition
ITS	Intelligent Transportation System
mA	milliamperes (thousandths of an amp)
ms	milliseconds (thousandths of a second)
NEMA	National Electrical Manufacturers Association
PC	Personal computer
Tester	The ATSI ICMT-4000 ITS Cabinet Monitoring System Tester.
Transfer Relay	An electro-mechanical relay used in a traffic signal electrical cabinet.
TR	Transfer Relay (see definition of Transfer Relay)
VDC	Volts DC

Term or Abbreviation	Definition
Vrms	Volts RMS (root-mean-squared)

2. Safety Information

IMPORTANT SAFETY INFORMATION !

READ BEFORE ATTEMPTING TO USE THE ICMT-4000 !

The ICMT-4000 (Tester) should only be used by qualified and authorized traffic signal technicians who are familiar with generally accepted electrical safety practices as well as local and national safety codes. To avoid possible electric shock, burns, or fire, read all information contained in this manual before attempting to use the Tester.

- Do not use the Tester around explosive gas, vapor, or dust.
- Do not use the Tester in a wet environment.
- Do not attempt to open any part of the Tester enclosure.
- Do not put hands or place any other object into the AMU/CMU slot.
- Do not attempt to test devices that have been subject to lightning strikes or other severe electrical stress.
- Only test AMU or CMU devices that are designed according to the “ITS Standard Specification for Roadside Cabinets".
- Only use the power cord provided with the tester.
- The tester should only be powered from 120V AC.

3. ICMT-4000 Installation

3.1. Computer Requirements

Windows XP (minimum)

At least one available USB port.

Adobe Acrobat Reader must be installed. (This can be downloaded for free at www.adobe.com).

3.2. ICMT-4000 Interface Software Installation

Installation of the software is a simple process. However it may require an administrative access to the computer.

The ICMT-4000 comes with a software CD which can be used to install the software. If the CD is not available, the software can be downloaded from the Internet. To download the software visit our website: www.atsi-tester.com.

To install the software from a CD insert it into the CD drive of the PC. A start-up screen should open automatically. In the start-up screen click "ICMT-4000" button, then follow the instructions in the software installation wizard.

To install the software that was downloaded from our website double-click the downloaded executable file to run the installation. Follow the instructions in the software installation wizard.

> **Note:** Do not forget to install the ATSI Tester USB device driver for ICMT-4000.

3.3. ICMT-4000 USB Driver Installation

To communicate with the ICMT-4000 an *ATSI Tester USB driver* needs to be installed. The same driver is used with several ATSI products and is included on the software installation CD. The latest version of the driver can also be downloaded from our website: www.atsi-tester.com. The driver installation package is also copied to the computer during the software installation.

To install the USB driver, insert the software installation CD that came with your ICMT-4000. Click on the "ATSI USB Device Driver" button and follow the instructions to install the driver. If you do not have the software installation CD, the USB driver may be downloaded from www.atsi-tester.com

4. Running Tests

Before running a test make sure the tester is plugged in to a standard 120V AC outlet and the power switch is turned on. Connect the tester to the computer with the USB cable (provided). See section 3.3 (ICMT-4000 USB Driver Installation) on how to install the USB driver. Start the ICMT-4000 Interface software. See section 3.2 (ICMT-4000 Interface Software Installation) on how to install the software.

4.1. Testing CMU

For the CMU, the following configuration should be programmed into the Serial Memory Key.

AMU Position 1 (byte 173) = 14
AMU Position 2 (byte 174) = 0
AMU Position 3 (byte 175) = 14
AMU Position 4 (byte 176) = 0

All other parameters (bytes) should be set to their default values.

To test a CMU:

•Slide it into the appropriate slot on the tester.

•From the ICMT-4000 Interface software click on the ***Test Setup*** tab and fill in the data. Make sure the ***212 CMU*** option is selected.

•Click on the ***Run Tests*** tab.

•To run a complete certification test, make sure the **Certification** button is selected.

•If you would like to select the individual tests that should be ran, select the **Diagnostics** button and then click the **Select Tests** button to select the tests.

•Click the **Start** button

•When the test is done, click **Save** button to save the test report.

4.2. Testing AMU

The AMU does need any special configuration.

To test an AMU:

•Slide the device into the appropriate slot on the tester.

•From the ICMT-4000 Interface software click on the ***Test Setup*** tab and

fill in the data. Make sure the ***214 AMU*** option is selected.

•Click on the ***Run Tests*** tab.

•To run a complete certification test, make sure the **Certification** button is selected.

•If you would like to select the individual tests that should be ran, select the **Diagnostics** button and then click the **Select Tests** button to select the tests.

•Click the **Start** button

•When the test is done, click **Save** button to save the test report.

5. Test Descriptions

All of the AMU and CMU tests are based on the *Intelligent Transportation System (ITS) Standard for Roadside Cabinets, v01.02.17b, November 16, 2006 , Section 4.4 and 4.5.* It is the intent of ATSI to test all of the requirements of the aforementioned standard as thoroughly as possible based on our best interpretation of the standard. Each individual jurisdiction (state, city, county) may have specific requirements or practices that are routinely followed which may deviate from the ITS standard or ignore certain parts. Furthermore, each AMU / CMU manufacturer may have certain features enabled or disabled in their devices to accommodate such deviations from the ITS Standard. Therefore, some tests may have the option to disable the testing of certain AMU / CMU functions. It is the responsibility of the user to determine if the test is appropriate for their local requirements.

5.1. CMU Tests

When testing a CMU, the Tester simulates an AMU. The Tester waits for the CMU to send a Type 2 (status request) command. The Tester checks for the appropriate address and the correct checksum and then responds with a Type 130 (status) response frame.

The test also verifies that the CMU recognizes the proper thresholds for determining active and inactive AMU input signals. The required thresholds are :

RED : Active > 70 Vrms, Inactive < 50 Vrms

GRN/YEL : Active > 25 Vrms, Inactive < 15 Vrms

Load Switch Coils (LSC) : Active > 105% of threshold, Inactive < 95% of threshold

An inactive state of the RED, YEL, and GRN inputs OR the LSC input on any channel for 1000 ms or more shall cause a Lack of Signal Fault and produce a Failed State Action (FSA).

YEL or GRN inputs that are active on conflicting channels for 500 ms or more shall cause a Conflict Fault and produce a FSA.

Note : The CMU must use a Serial Memory Key programmed as described in Section 4.1.

5.2. AMU Tests

When testing an AMU, the Tester sets all of the AMU voltage inputs to known values. The Tester then simulates a CMU and sends a valid Type 2 (status request) command frame to the AMU. The Tester then waits for

a Type 130 (status) response frame. The Tester checks for the appropriate address and the correct checksum. If the frame is valid, the voltage reported by the AMU is then compared to the known value suppled by the Tester. If the value reported is within +,- 2 Vrms of the known value, the test passes.

6. Service and Calibration

The ICMT-4000 has no user serviceable parts. Under no circumstances should the user attempt to open the enclosure. If the tester appears to be malfunctioning, contact ATSI to make arrangements for repair. See the *Limited Warranty and Liability* section of this manual for details.

ATSI strongly recommends that each Tester be calibrated yearly. A yearly calibration will verify that your Tester is operating within the original manufacturers specifications and provide you with a detailed calibration report for documentation. Please visit www.atsi-tester.com for the latest pricing of calibration services and extended maintenance plans.

7. Limited Warranty and Liability

The **ICMT-4000, ITS Cabinet Monitoring System Tester** (Product), distributed by Athens Technical Specialists, Inc. (ATSI), is warranted to the original purchaser (Purchaser) to be free of defects in materials and workmanship for a period of one year from the purchase date stated on the invoice. Within this period, in the event of a defect, malfunction, or other failure of the Product while in the custody of the Purchaser, ATSI will remedy the defect or cause of failure without charge to the Purchaser. The Purchaser's sole remedy is restoration of product operation. ATSI accepts no liability for incidental or related expenses. Under no circumstances will ATSI's liability exceed the purchase price for items claimed to be defective.

This Limited Warranty does not extend to any Product that has been damaged or rendered defective as a result of accident, misuse, abuse, modification of the product, or service by anyone other than ATSI.

EXCEPT AS EXPRESSLY SET FORTH IN THIS WARRANTY, ATSI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICUALR PURPOSE OF THE PRODUCT AND ANY DEVICE TESTED BY THE PRODUCT. ATSI EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED IN THIS LIMITED WARRANTY. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED TO THE TERMS OF THIS EXPRESS LIMITED WARRANTY.

Warranty Repair

To return the Product for repairs covered under the Limited Warranty :

Request a Return Merchandise Form by phone, fax, or email from the ATSI Service Department or complete the form at www.atsi-tester.com. Return the Product along with the completed form with prepaid postage to :

ATSI
8157 US Hwy 50
Athens, OH 45701

Phone: (740) 592 - 2874

Fax: (740) 594 - 2875

Email: service@atsi-tester.com

This page is left intentionally blank

ITS Cabinet Monitoring System Tester

Model ICMT-4000

User's Manual

Revision 1.3